CLAIMS

1.   A wireless LAN system comprising a plurality of wireless LAN base stations, a wireless LAN terminal wirelessly connected to the wireless LAN base stations, and

5   a diversity device that relays packet transmission between a terminal on an IP network connected thereto and the wireless LAN terminal,

wherein the wireless LAN terminal includes a first uplink packet processor that sequentially establishes

10   association with the wireless LAN base stations, and transmits a plurality of same uplink packets to the diversity device in parallel via the association-established wireless LAN base stations,

the diversity device comprises:

15   a second uplink packet processor that alternatively selects the received same uplink packets and transmits the selected uplink packet to the terminal on the IP network; and

a first downlink packet processor that creates a

20   plurality of same downlink packets from a downlink packet from the terminal on the IP network, and transmits the created same downlink packets to the wireless LAN terminal in parallel via the wireless LAN base stations with which the association has been established, and

25   the wireless LAN terminal comprises a second downlink packet processor that selects and outputs one of the same downlink packets from the diversity device received via the wireless LAN base stations.

30   2.   The wireless LAN system according to claim 1, wherein the first uplink packet processor sequentially adds the same sequence number to the same uplink packets to be transmitted,

the second uplink packet processor selects one uplink packet from the same uplink packets having the same sequence number, and transmits the selected uplink packet, from which the sequence number has been deleted, to the

5 terminal on the IP network,

the first downlink packet processor sequentially adds the same sequence number to the same downlink packets to be transmitted, and

the second downlink packet processor selects one

10 downlink packet from the same downlink packets having the same sequence number, and outputs the selected downlink packet, from which the sequence number has been deleted.

3. The wireless LAN system according to claim 1 or 2,

15 wherein the first uplink packet processor packetizes by an IP tunnel the same uplink packets to be transmitted and transmits the IP tunnel packets,

the second uplink packet processor cancels the IP tunnel of the received IP tunnel packets and executes the

20 selection process,

the first downlink packet processor packetizes by an IP tunnel the same downlink packets to be transmitted and transmits the IP tunnel packets, and

the second downlink packet processor cancels the IP

25 tunnel of the received IP tunnel packets and executes the selection process.

4. The wireless LAN system according to claim 2, wherein the second uplink packet processor and the second downlink

30 packet processor respectively operate so as to select a first correctly received packet among the packets having the same sequence number, and dispose of a packet having the same sequence number received thereafter.

5.   The wireless LAN system according to claim 2, wherein the second uplink packet processor and the second downlink packet processor respectively wait for a certain period of time to receive a plurality of downlink packets having the same sequence number, and select one packet out of one or the plurality of packets having the same sequence number received within the certain period of time.

6.   The wireless LAN system according to claim 2, wherein the wireless LAN base station transmits any one of the radio status and an error check result or both at the time of receiving the uplink packet from the first uplink packet processor,

      the second uplink packet processor selects one of the received packets having the same sequence number, which has any one of excellent radio status and error check result or both, and

      the second downlink packet processor selects one of the received packets having the same sequence number based on any one of the radio status and the error check result or both at the time of receiving the downlink packet.

7.   The wireless LAN system according to claim 3, wherein the diversity device is a home agent.

8.   The wireless LAN system according to claim 2, wherein the diversity device is a layer 2 switch.

9.   The wireless LAN system according to claim 8, wherein when the same MAC addresses are detected at a plurality of ports, the layer 2 switch executes the process by the second uplink packet processor and the first downlink

packet processor with respect to the packets from the ports.

10.   The wireless LAN system according to claim 9, wherein
the wireless LAN terminal or the wireless LAN base station
5   sends out a dummy packet for learning the MAC address of
the wireless LAN terminal in the uplink direction to the
layer 2 switch, upon establishment of the association.

11.   A diversity device applied to a wireless LAN system
10   comprising a plurality of wireless LAN base stations, a
wireless LAN terminal wirelessly connected to the wireless
LAN base stations, and a diversity device that relays
packet transmission between a terminal on an IP network
connected thereto and the wireless LAN terminals, wherein
15   the wireless LAN terminal includes a first uplink packet
processor that sequentially establishes association with
the wireless LAN base stations, and transmits a plurality
of same uplink packets to the diversity device in parallel
via the association-established wireless LAN base stations,
20   and a first downlink packet processor that selects and
outputs one of a plurality of same downlink packets from
the diversity device received via the wireless LAN base
stations, wherein
     the diversity device comprises:
25   a second uplink packet processor that alternatively
selects the same uplink packets received via the wireless
LAN base stations and transmits the selected uplink packet
to the terminal on the IP network; and
          a second downlink packet processor that creates a
30   plurality of same downlink packets from the downlink packet
from the terminal on the IP network, and transmits the
created same downlink packets to the wireless LAN terminal
via the wireless LAN base stations with which the

association has been established.

12.   A diversity device applied to a wireless LAN system
comprising a plurality of wireless LAN base stations, a
5   wireless LAN terminal wirelessly connected to the wireless
LAN base stations, and a diversity device that relays
packet transmission between a terminal on an IP network
connected thereto and the wireless LAN terminals, wherein
     the diversity device comprises a first downlink packet
10   processor that creates a plurality of same downlink packets
from a downlink packet from the terminal on the IP network,
and transmits the created same downlink packets to the
wireless LAN terminal in parallel via the wireless LAN base
stations with which the association has been established,
15   and a first uplink packet processor that alternatively
selects a plurality of same uplink packets received from
the wireless LAN terminal via the wireless LAN base
stations and transmits the selected uplink packet to the
terminal on the IP network, wherein
20   the diversity device comprises:
     a second uplink packet processor that sequentially
establishes association with the wireless LAN base stations,
and transmits a plurality of same uplink packets to the
diversity device in parallel via the association-
25   established wireless LAN base stations, and
     a second downlink packet processor that selects and
outputs one of a plurality of same downlink packets from
the diversity device received via the wireless LAN base
stations.